



ARIZONA STATE UNIVERSITY

GENERAL STUDIES COURSE PROPOSAL COVER FORM

Course information:

Copy and paste current course information from Class Search/Course Catalog.

Academic Unit School of Life Sciences Department ---
Subject BIO Number 416 Title Professional Values in Science Units: 3
Is this a cross-listed course? Yes
If yes, please identify course(s) HPS 410
Is this a shared course? No If so, list all academic units offering this course
Course description:

Requested designation: Literacy and Critical Inquiry-L
Note- a separate proposal is required for each designation requested

Eligibility:
Permanent numbered courses must have completed the university's review and approval process.
For the rules governing approval of omnibus courses, contact the General Studies Program Office at (480) 965-0739.

Area(s) proposed course will serve:
A single course may be proposed for more than one core or awareness area. A course may satisfy a core area requirement and more than one awareness area requirements concurrently, but may not satisfy requirements in two core areas simultaneously, even if approved for those areas. With departmental consent, an approved General Studies course may be counted toward both the General Studies requirement and the major program of study.

- Checklists for general studies designations:
Complete and attach the appropriate checklist
Literacy and Critical Inquiry core courses (L)
Mathematics core courses (MA)
Computer/statistics/quantitative applications core courses (CS)
Humanities, Fine Arts and Design core courses (HU)
Social and Behavioral Sciences core courses (SB)
Natural Sciences core courses (SQ/SG)
Global Awareness courses (G)
Historical Awareness courses (H)
Cultural Diversity in the United States courses (C)

- A complete proposal should include:
Signed General Studies Program Course Proposal Cover Form
Criteria Checklist for the area
Course Syllabus
Table of Contents from the textbook and list of required readings/books

Contact information:
Name Karin Ellison Phone 480-727-7111
Mail code 3301 E-mail: karin.ellison@asu.edu

Department Chair/Director approval: (Required)
Chair/Director name (Typed): Miles Orchinik Date:
Chair/Director (Signature):

Arizona State University Criteria Checklist for
LITERACY AND CRITICAL INQUIRY - [L]

Rationale and Objectives

Literacy is here defined broadly as communicative competence in written and oral discourse. **Critical inquiry** involves the gathering, interpretation, and evaluation of evidence. Any field of university study may require unique critical skills which have little to do with language in the usual sense (words), but the analysis of spoken and written evidence pervades university study and everyday life. Thus, the General Studies requirements assume that all undergraduates should develop the ability to reason critically and communicate using the medium of language.

The requirement in Literacy and Critical Inquiry presumes, first, that training in literacy and critical inquiry must be sustained beyond traditional First Year English in order to create a habitual skill in every student; and, second, that the skills become more expert, as well as more secure, as the student learns challenging subject matter. Thus, the Literacy and Critical Inquiry requirement stipulates two courses beyond First Year English.

Most lower-level [L] courses are devoted primarily to the further development of critical skills in reading, writing, listening, speaking, or analysis of discourse. Upper-division [L] courses generally are courses in a particular discipline into which writing and critical thinking have been fully integrated as means of learning the content and, in most cases, demonstrating that it has been learned.

Students must complete six credit hours from courses designated as [L], at least three credit hours of which must be chosen from approved upper-division courses, preferably in their major. Students must have completed ENG 101, 107, or 105 to take an [L] course.

Notes:

1. ENG 101, 107 or ENG 105 must be prerequisites
2. Honors theses, XXX 493 meet [L] requirements
3. The list of criteria that must be satisfied for designation as a Literacy and Critical Inquiry [L] course is presented on the following page. This list will help you determine whether the current version of your course meets all of these requirements. If you decide to apply, please attach a current syllabus, or handouts, or other documentation that will provide sufficient information for the General Studies Council to make an informed decision regarding the status of your proposal.

Proposer: Please complete the following section and attach appropriate documentation.

ASU - [L] CRITERIA			
TO QUALIFY FOR [L] DESIGNATION, THE COURSE DESIGN MUST PLACE A MAJOR EMPHASIS ON COMPLETING CRITICAL DISCOURSE--AS EVIDENCED BY THE FOLLOWING CRITERIA:			
YES	NO		Identify Documentation Submitted
<input checked="" type="checkbox"/>	<input type="checkbox"/>	CRITERION 1: At least 50 percent of the grade in the course should depend upon writing, including prepared essays, speeches, or in-class essay examinations. <i>Group projects are acceptable only if each student gathers, interprets, and evaluates evidence, and prepares a summary report</i>	Syllabus indicates 2/3s of grade is from cases and exams.
1. Please describe the assignments that are considered in the computation of course grades--and indicate the proportion of the final grade that is determined by each assignment.			
2. Also: <div style="border: 1px solid black; border-radius: 50%; padding: 10px; text-align: center; margin: 10px 0;"> <p style="background-color: yellow;">Please circle, underline, or otherwise mark the information presented in the most recent course syllabus (or other material you have submitted) that verifies this description of the grading process--and label this information "C-1".</p> </div> <p style="text-align: center;">C-1</p>			
<input checked="" type="checkbox"/>	<input type="checkbox"/>	CRITERION 2: The composition tasks involve the gathering, interpretation, and evaluation of evidence	Handout "Writing a case and analyzing it."
1. Please describe the way(s) in which this criterion is addressed in the course design			
2. Also: <div style="border: 1px solid black; border-radius: 50%; padding: 10px; text-align: center; margin: 10px 0;"> <p style="background-color: yellow;">Please circle, underline, or otherwise mark the information presented in the most recent course syllabus (or other material you have submitted) that verifies this description of the grading process--and label this information "C-2".</p> </div> <p style="text-align: center;">C-2</p>			
<input checked="" type="checkbox"/>	<input type="checkbox"/>	CRITERION 3: The syllabus should include a minimum of two substantial writing or speaking tasks, other than or in addition to in-class essay exams	Syllabus indicates each student will write 2 cases.C-3
1. Please provide relatively detailed descriptions of two or more substantial writing or speaking tasks that are included in the course requirements			
2. Also: <div style="border: 1px solid black; border-radius: 50%; padding: 10px; text-align: center; margin: 10px 0;"> <p style="background-color: yellow;">Please circle, underline, or otherwise mark the information presented in the most recent course syllabus (or other material you have submitted) that verifies this description of the grading process--and label this information "C-3".</p> </div> <p style="text-align: center;">C-3</p>			

ASU - [L] CRITERIA			
YES	NO		Identify Documentation Submitted
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>CRITERION 4: These substantial writing or speaking assignments should be arranged so that the students will get timely feedback from the instructor on each assignment in time to help them do better on subsequent assignments. <i>Intervention at earlier stages in the writing process is especially welcomed</i></p>	Syllabus indicates instructor will comment on drafts.
<p>1. Please describe the sequence of course assignments--and the nature of the feedback the current (or most recent) course instructor provides to help students do better on subsequent assignments</p>			
<p>2. Also:</p> <div style="border: 1px solid black; border-radius: 50%; padding: 10px; text-align: center;"> <p style="background-color: yellow;">Please circle, underline, or otherwise mark the information presented in the most recent course syllabus (or other material you have submitted) that verifies this description of the grading process--and label this information "C-4".</p> </div>			
C-4			

Course Prefix	Number	Title	Designation
Bio	416	Professional Values in Science	L

Explain in detail which student activities correspond to the **specific** designation criteria.
Please use the following organizer to explain how the criteria are being met.

Criteria (from checksheet)	How course meets spirit (contextualize specific examples in next column)	Please provide detailed evidence of how course meets criteria (i.e., where in syllabus)
C-1. 50% or more of grade comes from writing	Major assignments in the course are writing case studies and essay exams. These make up 2/3s of the grade	The syllabus section "Evaluation and the Fine Print" gives the point breakdown for the semester grade.
C-2. Writing involves gathering, evaluating, and interpreting evidence.	Cases will be based on research on current events and scholarly analyses of the topic on which students develop cases. In addition, students will identify a relevant professional ethics code and analyze how it applies to the case	Handout "Writing a case and analyzing it." See especially the case and the third part of the analysis.
C-3. At least 2 writing assignments	Each student writes two cases.	.The syllabus section "Case Workshops" indicates students must write 2 cases. The handout "Writing a case and analyzing it" describes in detail the expectations for a case.
C-4 Timely feedback.	The case assignments are set up as workshops. Students write and submit drafts. They receive comments from the instructor and peers. They then revise and submit a final, polished case for grading.	The syllabus section "Case Workshops" also describes the feedback students will receive on writing.

BIO 416/HPS 410: Professional Values in Science

Syllabus

Spring 2013

Mondays, 1:30-2:45 PM in LSC 182 OR LSE B04

Wednesdays, 1:30-2:45 PM in LSE B04

Karin Ellison
LSC 270, 727-7111
karin.ellison@asu.edu
Office Hours: Tuesdays 1:30-3:30

Nathan Johnson
LSC 280
Nathan.W.Johnson@asu.edu

Course Goals

- To help you understand the ethical decisions that confront scientists every day
- To broaden your understanding of science as it is really practiced
- To alert you to new ethical conflicts which are arising in science every day
- To make you a more skeptical and informed citizen
- To give you a clearer understanding of the joys and difficulties of science
- To provide you with unique tools for your future career in science or elsewhere
- To help you make career decisions
- To introduce you to some very interesting and informative individuals
- To make you think!

Class Overview

The format of this class provides unusual opportunities, which come with responsibilities. Most Wednesday sessions will be devoted to discussion between class members and a panel of 3-5 invited guests. Our guests are ASU faculty, graduate students, staff, and other professionals from the Phoenix area. The guests will not be lecturing or making prepared remarks. Instead, they are here to participate in a discussion with you and to answer your questions about science and each session's topic. This is a special opportunity for you to learn about the life sciences, and the myriad practices and ethical issues associated with contemporary science, from many active scientists, science administrators, and ethicists. It is your responsibility to make the most of this opportunity so that the time you, your classmates, and all our guests devote to the course will be well worth everyone's investment. Towards that end, we have developed the reading and writing assignments, described below, to help you come to class ready to engage in interesting and productive discussions.

Most Mondays will be devoted to small group discussion and case workshops to consolidate your understanding of the materials introduced in the panel discussions and readings. Two short answer exams, one in the middle of the semester and one at the end, will assess your comprehension of issues raised in the course.

Assignments

For this course you will: 1) complete readings, 2) attend panels and submit panel discussion questions, 3) be a panel session leader once, 4) attend group discussions and workshops, 4) write two cases (4-5 pgs each), post them for peer review, discuss them with your workshop group, revise, and submit final, revised cases, 5) provide written comments on other students' cases (approx. 10 pages total), and 5) take two exams.

1. Readings

Reading assignments are given in the “Course Schedule.” Readings must be completed *before* each panel session so that discussion can grow out of your knowledge of the readings. Links to course readings, or instructions on how to access the readings electronically, will be posted in the course’s BlackBoard Web site.

2. Panel Sessions

All Students

Since the panel sessions of this course are student-guided discussions, attendance and good questions are extremely important to learning. To encourage these, for each panel session you will submit three questions that you could ask our guests based on the readings. *Paper* copies of your questions are due at the beginning of class. You will get credit for each class session you attend and turn in questions. You may wish to bring two copies, so that you also have them to ask during the discussion.

Note: the panel attendance/question portion of your grade will cap your course grade. No one can receive a higher course grade than his or her panel attendance/question grade. We will grade attendance/questions on a straight scale without pluses and minuses: 90% and above receives an A, 80% and above a B, etc. This means, out of 12 panel sessions, a student must attend and submit questions for 11 or more to receive an A, 10 or more to receive a B, 8 or more to receive a C, or 7 or more to receive a D.

Panel Session Leaders

For each panel session of the course, four or five students will be responsible for starting the discussion. In the week you are a session leader and the week prior, you have several tasks. They are:

- a) Meet briefly at the end of the preceding panel session to discuss strategy.
- b) Contact one guest to reiterate the invitation to participate in class and ask how he or she wishes to be introduced.
- c) Introduce one guest in class.
- d) Lead the discussion by asking one or more well thought out questions during the session.
- e) Write one guest a *paper* thank-you note after the class session.
- f) If the group of students leading a session is larger than the number of guests, students not assigned to host a guest will ask the first questions.

3. Discussion/Workshop Sessions

Small Group Discussions

During most Monday sessions, half the class will discuss readings and cases with Ellison in LSE. Discussions will cover the two topics indicated in the course schedule. Discussion will allow you to process and integrate the information learned from assigned readings and course visitors. Discussion groups and rooms will be assigned on the first Wednesday of class.

Case Workshops

The other half of the class will participate in case workshops with Johnson in LSC. This half will further divide into groups of five students to workshop student written cases. The case workshop will provide you the opportunity to further process and integrate the course materials, strengthen your writing, and develop ethical problem-solving skills.

Each student will write, present, and revise two cases over the semester. A case and its analysis will be 4-7 pages; you will write 2 cases for a total of 8-14 pages total over the semester.

Karin Ellison 2/1/14 11:49 PM

Comment [1]: C-3

For each workshop session, two of the five group members will pre-circulate draft cases and analyses by posting them to BlackBoard one week before the workshop. In class, the authors will briefly present the case and the group will discuss it. Each other group member will provide one page of written comments on each case (10 pages total over the semester). These *written comments are due in class the day of the workshop in which the case is discussed*. Bring two copies—one for the case author and one to turn in. An instructor will also provide written comments on the draft case. Authors will revise cases based on comments from peers and Nate Johnson and submit the final, revised case two weeks after the workshop. See BlackBoard for specific deadlines.

Karin Ellison 2/1/14 11:54 PM

Comment [2]: C-4

Writing cases will help you develop ethical problem-solving skills. In applied ethics, problem solving is taught by posing a situation that presents an ethical dilemma and articulating and evaluating possible courses of action. (An ethical dilemma is a situation in which conflicting values, ethical obligations, or other ethical dimensions must be resolved or negotiated to determine a course of action.) In particular, cases allow you to practice thinking through sticky situations by identifying and analyzing: 1) points of conflict; 2) regulations, ethical values, and other relevant norms and standards applicable in the situation; 3) individuals and institutions affected by the situation; 4) options for action; and 5) major consequences of proposed actions. Learning ethical problem solving skills promotes critical thinking and lets you practice struggling with ethical issues so that you will be better able to address ethical problems when you encounter them in professional settings.

4. Exams

There will be mid-term and final exams. Exams should take 60-75 minutes to write. They will consist of identification and short answer questions.

Evaluation and the Fine Print

We will generally assign grades for this course as follows:

- Panel attendance and questions: 120 pts (10 pts for each class meeting)
- Hosting a guest: 30 pts
- Cases: 300 pts (50 pts for each draft; 100 pts for each completed case)
- Written peer reviews of cases: 150 pts (15 pts each for 10 reviews)
- Exams: 300 pts (150 pts for each exam)

Karin Ellison 2/1/14 11:04 PM

Comment [3]: C-1

We calculate course grades using a 15-point scale. We will convert your point total to the scale below. We reserve the right to assign any student a final grade that is higher than merited by

Syllabus

strict calculation based on academic criteria, such as improvement in grades over the semester or atypical and explainable poor performance on a single assignment.

A	15	C+	8
A-	14	C	7
B+	12	D	3
B	11	E	0
B-	10		

We only accept late assignments in rare circumstances. These include professional conflicts, major and documented illnesses, personal or family crises, etc. Should any of these arise, you are responsible for discussing the circumstances with us ASAP, before you miss a deadline if at all possible.

Disabilities

If you have a significant disability condition (physical, learning, psychiatric, vision, hearing, etc.) and want to arrange reasonable accommodations, you must contact us at the course beginning, be registered with the Disability Resource Center (DRC), and provide us appropriate documentation from the DRC.

Academic Integrity

Under the ASU Student Academic Integrity Policy (<http://provost.asu.edu/academicintegrity>), “[e]ach student must act with honesty and integrity, and must respect the rights of others in carrying out all academic assignments.” This policy also defines academic dishonesty and sets a process for faculty members and colleges to penalize dishonesty. Violations of this policy fall into five broad areas that include but are not limited to:

1. Cheating on an academic evaluation or assignment
2. Plagiarizing
3. Academic deceit, such as fabricating data or information
4. Aiding Academic Integrity Policy violations and inappropriately collaborating
5. Falsifying academic records

We welcome any questions you may have concerning academic integrity and will do my best to help you understand the standards of academic scholarship. We also penalize any incidents of academic dishonesty in my courses using University and CLAS guidelines.

It would be especially pathetic to fail an ethics course for cheating!

Week 1

1/7/13, LSE Introduction--Logistics

1/9/13, LSE, Introduction--Ethics and Science Lecture

Readings

Steneck, Nicholas H. "Rules of the Road." Chap. 1, In *ORI Introduction to the Responsible Conduct of Research*. Revised ed., 5-18. Washington, DC: Health and Human Services Dept., Office of Research Integrity, 2004.

Harris, C. E., Michael S. Pritchard, and Michael J. Rabins. "Ch. 1 Why Professional Ethics?" In *Engineering Ethics: Concepts and Cases*. 4th ed., 1-22. Australia; Belmont, CA: Wadsworth, 2009.

Heitman, Elizabeth. "Ethical Values in the Education of Biomedical Researchers." *Hastings Center Report* 30, no. 4 (July-Aug., 2000): S40-S44.

Week 2

1/14/13, LSE, Authorship, Publication, Peer Review Panel

Guests

- Gro Amdam, Associate Professor, SOLS
- Josh Gibson, PhD Student, Biology
- Manfred Laubichler, President's Professor, SOLS

Readings

Steneck, Nicholas H. "Authorship and Publication." Chap. 9, In *ORI Introduction to the Responsible Conduct of Research*. Revised ed., 133-146. Washington, DC: Health and Human Services Dept., Office of Research Integrity, 2004.

Steneck, Nicholas H. "Peer Review." Chap. 10, In *ORI Introduction to the Responsible Conduct of Research*. Revised ed., 147-158. Washington, DC: Health and Human Services Dept., Office of Research Integrity, 2004.

Bird, S. J. "Self-Plagiarism and Dual and Redundant Publications: What is the Problem? Commentary on 'Seven Ways to Plagiarize: Handling Real Allegations of Research Misconduct'." *Science and Engineering Ethics* 8, no. 4 (OCT, 2002): 543-544.

Budden, Amber E., Tom Tregenza, Lonnie W. Aarssen, Julia Koricheva, Roosa Leimu, and Christopher J. Lortie. "Double-Blind Review Favours Increased Representation of Female Authors." *TRENDS in Ecology and Evolution* 23, no. 1 (2007): 4-6.

Couse Schedule

Devine, E. B., J. Beney, and L. A. Bero. "Equity, Accountability, Transparency: Implementation of the Contributorship Concept in a Multi-Site Study." *American Journal of Pharmaceutical Education* 69, no. 4 (2005): 61.

Errami, Mounir and Harold Garner. "A Tale of Two Citations." *Nature* 451, no. 7177 (JAN 24, 2008): 397-399.

McCook, A. "Is Peer Review Broken?" *Scientist* 20, no. 2 (FEB, 2006): 26-+.

Rennie, D., V. Yank, and L. Emanuel. "When Authorship Fails - A Proposal to make Contributors Accountable." *JAMA-Journal of the American Medical Association* 278, no. 7 (AUG 20, 1997): 579-585.

Resnik, David B. "A Troubled Tradition." *American Scientist* 99, no. 1 (Jan.-Feb., 2011): 24.

1/16/13, LSE, Human Subjects Panel**Guests**

- Douglas Lake, Associate Professor, SOLS
- Susan Metosky, Assistant Director, Research Integrity & Assurance
- Lora Nordstrom, Coordinator, Center for Microbiomics and Human Health & Center for Food Microbiology and Environmental Health, TGen North
- Amanda Rangel, Director of Business Development, Clinical Research Advantage

Readings

Steneck, Nicholas H. "The Protection of Human Subjects." Chap. 3, In *ORI Introduction to the Responsible Conduct of Research*. Revised ed., 35-50. Washington, DC: Health and Human Services Dept., Office of Research Integrity, 2004.

National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research. *The Belmont Report: Ethical Principles and Guidelines for the Protection of Human Subjects of Research*. Washington D.C.: Department of Health, Education, and Welfare, 1979.

Appelbaum, Paul S., Loren H. Roth, Charles W. Lidz, Paul Benson, and William Winslade. "False Hopes and Best Data: Consent to Research and the Therapeutic Misconception." In *The Ethical Dimensions of the Biological Sciences*, edited by Ruth Ellen Bulger, Elizabeth Heitman and Stanley Joel Reiser. Second ed., 139-147. Cambridge; New York: Cambridge University Press, 2002.

Chen, Pauline W. "Bending the Rules of Clinical Trials." *The New York Times*, October 29, 2009.

Giles, J. "Stacking the Deck." *Nature* 440, no. 7082 (March 16, 2006): 270-272.

Mitchell, R., J. M. Conley, A. M. Davis, R. J. Cadigan, A. W. Dobson, and R. Q. Gladden. "Genomics. Genomics, Biobanks, and the Trade-Secret Model." *Science* (New York,

Couse Schedule

N.Y.) 332, no. 6027 (Apr 15, 2011): 309-310.

Wadman, Meredith. "The Professional Guinea Pig: Big Pharma and the Risky World of Human Subjects." *Nature* 467, no. 7317 (October 14, 2010): 786-786.

Week 3

1/21/13, No Class, MLK

1/23/13, Gold Pod, Animals Facility Tour

Week 4

1/28/13, Discussion/Workshop A (Publication and Peer Review) and B (Human Subjects)

- Gold Pod: Discussion in LSE
- Maroon Pod: Workshops in LSC

1/30/13, Maroon Pod, Animals Facility Tour

Week 5

2/4/13, Discussion/Workshop A (Publication and Peer Review) and B (Human Subjects)

- Gold Pod: Workshops in LSC
- Maroon Pod: Discussion in LSE

2/6/13, LSE, Animal Subjects Panel

Guests

- Dale Denardo, IACUC Chair and Associate Professor, School of Life Sciences
- Joanne Tetens, Director, Department of Animal Care Technologies, and Attending Veterinarian
- Stephen Helms-Tillery, Associate Professor, School of Biology and Health Systems Engineering

Readings

Steneck, Nicholas H. "The Welfare of Laboratory Animals." Chap. 4, In *ORI Introduction to the Responsible Conduct of Research*. Revised ed., 51-66. Washington, DC: Health and Human Services Dept., Office of Research Integrity, 2004.

American Physiological Society. *Animal Research: Finding Cures, Saving Lives* 2010.

Marris, Emma. "An Easy Way Out?" *Nature* 441, (1 June, 2006): 570-571.

Couse Schedule

"Real Animal Lovers Spay, Neuter Pets." *Arizona Republic*, April 2, 2009.

———. "Grey Matters." *Nature* 444, (14 Dec., 2006): 808-810.

Cohen, Jon. "The Endangered Lab Chimp." *Science* 315, (26 Jan, 2007): 450-452.

"Puppy Mills: A Dog's Life." *The Economist* (11 Nov, 2010).

Grimm, David. "Dog Dealers' Days may be Numbered." *Science* 327, (26 Feb, 2012): 1076-1077.

Jensen, Edythe. "Arizona Farmers, Humane Society at Odds Over Animal Rights." *Arizona Republic*, 4 Feb, 2011.

Week 6**2/11/13, Discussion/Workshop C (Animals) and D (Mentors)**

- Gold Pod: Discussion in LSE
- Maroon Pod: Workshops in LSC

2/13/13, LSE, Mentors and Trainees Panel**Guests**

- Jane Maienschein, Director, Center for Biology and Society & Regents' Professor, President's Professor, and Parents Association Professor, SOLS
- Kevin McGraw, Associate Professor, SOLS
- Stuart Newfeld, Professor, SOLS

Readings

Steneck, Nicholas H. "Mentor and Trainee Responsibilities." Chap. 7, In *ORI Introduction to the Responsible Conduct of Research*. Revised ed., 103-116. Washington, DC: Health and Human Services Dept., Office of Research Integrity, 2004.

Levine, Irene S. "Mind Matters: Getting Yourself Mentored." *Science, Science Careers*. http://sciencecareers.sciencemag.org.ezproxy1.lib.asu.edu/career_magazine/previous_issues/articles/2006_11_24/noDOI.554739045211196526 (accessed Dec. 27, 2011).

Evans, Jennifer. "Mentoring Magic." *The Scientist* 22, no. 12 (December 2008): 70.

Sutkowski, Owen. "Kitchen Cabinet of Mentors." *Inside Higher Ed*.

http://www.insidehighered.com/advice/2011/07/06/essay_on_the_importance_of_having_multiple_mentors (accessed Dec. 29, 2011).

Davidson, Elizabeth. "This I Believe." *This I Believe*. <http://thisibelieve.org/essay/15166/> (accessed Dec. 27, 2011).

Couse Schedule

"Preparing Future Faculty." ASU Graduate College. <http://graduate.asu.edu/pff> (accessed Dec. 26, 2011).

Redden, Molly. "Online-Mentor Program Raises Retention of at-Risk Science Students." *Chronicle of Higher Education*, Sept. 11, 2011.

Week 7**2/18/13, Discussion/Workshop C (Animals) and D (Mentors)**

- Gold Pod: Workshops in LSC
- Maroon Pod: Discussion in LSE

2/20/13, LSE, Misconduct Panel**Guests**

- Betty Davidson, Research Professor, SOLS
- Jon Harrison, Assistant Vice President and Director of Infrastructure and Research Facilities, OKED; Professor, SOLS
- Kenro Kusumi, Associate Dean for Graduate Program, College of Liberal Arts and Sciences; Associate Professor, SOLS
- Eric Wertheimer, Associate Vice Provost and Professor, Graduate College

Readings

Steneck, Nicholas H. "Research Misconduct." Chap. 2, In *ORI Introduction to the Responsible Conduct of Research*. Revised ed., 19-30. Washington, DC: Health and Human Services Dept., Office of Research Integrity, 2004.

Steneck, Nicholas H. "Data Management Practices." Chap. 6, In *ORI Introduction to the Responsible Conduct of Research*. Revised ed., 87-102. Washington, DC: Health and Human Services Dept., Office of Research Integrity, 2004.

Couzin, Jennifer. "Truth and Consequences." *Science* 313, no. 5791 (SEP 1, 2006): 1222-1226.

Davidson, Elizabeth W., Heather E. Cate, Cecil M. Lewis, and Melanie Hunter. "Data Manipulation in the Undergraduate Laboratory: What are we Teaching?" In *Investigating Research Integrity: Proceedings of the First Research Conference on Research Integrity*, edited by Nicholas H. Steneck and Mary D. Scheetz, 27-34. Washington, D.C.: US Department of Health and Human Services, 2002.

Gawrylewski, Andrea. "Fixing Fraud: Tips for Preventing Research Misconduct and Maintaining the Integrity of Your Research." *The Scientist* 23, no. 3 (March 1, 2009): 67.

Loui, M. C. "Seven Ways to Plagiarize: Handling Real Allegations of Research Misconduct." *Science and Engineering Ethics* 8, no. 4 (OCT, 2002): 529-539.

Couse Schedule

Martinson, B. C., M. S. Anderson, and R. de Vries. "Scientists Behaving Badly." *Nature* 435, no. 7043 (JUN 9, 2005): 737-738.

Pimple, Kenneth D. "How Common is Bad Behavior in Science?"
http://mypage.iu.edu/~pimple/bad_behavior_rate.pdf (accessed Dec. 27, 2011).

Redman, Barbara K. and Jon F. Merz. "Scientific Misconduct: Do the Punishments Fit the Crime?" *Science* 321, (Aug. 8, 2008): 775.

ASU Integrity Advocates. *Academic Integrity* Arizona State University, 2006.

Dyer, Clare. "Lancet Retracts Wakefield's MMR Paper." *Bmj* 340, (Feb 2, 2010): c696.

Week 8

2/25/13, Discussion/Workshop E (Misconduct) and A (Vaccines)

- Gold Pod: Discussion in LSE
- Maroon Pod: Workshops in LSC

2/27/13, LSE, Vaccine Development Panel

Guests

- Charlie Arntzen, Regents' Professor, Florence Ely Nelson Presidential Chair, and Co-Director, Center for Infectious Diseases and Vaccinology, Biodesign Institute, SOLS, and Department of Applied Sciences and Mathematics
- Josephine Clark-Curtiss, Professor, Biodesign Institute and SOLS
- Daniel Orenstein, Faculty Associate, Law

Readings

Butler, Declan. "Vaccine Venture Boosts Health Hopes." *Nature* 461, no. 7262 (SEP 17, 2009): 323-323.

Callaway, Ewen. "Vaccine Switch Urged for Polio Endgame." *Nature* 493, no. 7432 (2013): 285.

Dawson, Angus. "The Moral Case for the Routine Vaccination of Children in Developed and Developing Countries." *Health Affairs (Project Hope)* 30, no. 6 (2011): 1029-1033.

Harth, Richard. "Halting Tuberculosis' Stubborn Ascent." *ASU News: Science & Tech* (May 31, 2012). https://asunews.asu.edu/20120531_tbresearch

Harth, Richard. "Defensive Measures: Toward a Vaccine for Ebola." *ASU News [science & tech]* (Dec. 4, 2011). https://asunews.asu.edu/20111205_ebolavaccine

Kwok, Roberta. "The Real Issues in Vaccine Safety." *Nature* 473, no. 7348 (MAY 26, 2011): 436-438.

Couse Schedule

Robert, Jason Scott and Dwayne D. Kirk. "Ethics, Biotechnology, and Global Health: The Development of Vaccines in Transgenic Plants." *The American Journal of Bioethics : AJOB* 6, no. 4 (2006): W29-W41.

Wadman, Meredith. "HIV Trial Under Scrutiny." *Nature* 493, no. 7432 (2013): 279.

Dyer, Clare. "Lancet Retracts Wakefield's MMR Paper." *BMJ* 340, (Feb 2, 2010): c696.

Week 9

3/4/13, LSE, Review Session

3/6/13, LSE, Exam I

Week 10--No Class, Spring Break**Week 11**

3/18/13, Discussion/Workshop E (Misconduct) and A (Vaccines)

- Gold Pod: Workshops in LSC
- Maroon Pod: Discussion in LSE

3/20/13, LSE, Neuroscience Panel

Guests

- Janet Neisewander, Co-Director Interdisciplinary Graduate Program in Neuroscience; Professor, SOLS
- Carolyn Posey, Graduate Student, Interdisciplinary Graduate Program in Neuroscience
- Joel Garreau, Research Professor, Law

Readings

Schacter, Daniel L. and Elizabeth F. Loftus. "Memory and Law: What can Cognitive Neuroscience Contribute?" *Nature Neuroscience* 16, no. 2 (Feb., 2013): 119-123.

Greely, Henry, Barbara Sahakian, John Harris, Ronald C. Kessler, Michael Gazzaniga, Philip Campbell, and Martha Farah. "Towards Responsible use of Cognitive-Enhancing Drugs by the Healthy." *Nature* 456, (11 Dec, 2008): 702-705.

Tennison, Michael N. and Jonathan D. Moreno. "Neuroscience, Ethics, and National Security: The State of the Art." *PLOS Biology* 10, no. 3 (March, 2012): 1-4.

Chan, Cecilia. "Brain Therapy Giving Hope of New Way to Conquer Afflictions." *Arizona Republic*, 4 Apr, 2010.

Couse Schedule

Garreau, Joel. "Brain Wave of the Future: What if You could Move Objects with Your Mind? Well, that Time has Come." *The Washignton Post*, April 23, 2009, Suburban, sec. Style.

Coulombe, Peggy. "Faculty Answer Questions about Drugs with Scientific Facts." ASU School of Life Sciences. Nov. 9, 2010. <https://sols-asu-edu.ezproxy1.lib.asu.edu/news-events/news/faculty-answer-questions-about-drugs-scientific-facts>

Tantibanchachai, Chanapa. "Brain Teasers at ASU: Children Learn Neuroscience." asu news [now]. 7 April, 2011. https://asunews-asu-edu.ezproxy1.lib.asu.edu/20100405_brainfair

Week 12**3/25/13, Discussion/Workshop B (Neuroscience) and C (Genomics)**

- Gold Pod: Discussion in LSE
- Maroon Pod: Workshops in LSC

3/27/13, LSE, Genomics Panel**Guests**

- Bob Greenes, Chair and Professor, Biomedical Informatics
- Katherine Hunt, Genetic Counselor, Mayo Clinic; Doctoral Candidate, Biology/Bioethics, Policy, and Law, SOLS
- Ben Hurlbut, Assistant Professor, SOLS

Readings

American College of Obstetricians and Gynecologists. "Cystic Fibrosis: Prenatal Screening and Diagnosis." *FAQ 171: Pregnancy*. August 2011.

<http://www.acog.org/~media/For%20Patients/faq171.pdf?dmc=1&ts=20140131T1705079357>

Lewin, Tamar. "College Bound, DNA Swab in Hand." *New York Times*, May 18, 2010.

Samani, Nilesh J., Maciej Tomaszewski, and Heribert Schunkert. "The Personal Genome--the Future of Personalised Medicine?" *Lancet* 375, (May 1, 2010): 1497-1498.

Manolio, Teri A. and et. al. "Implementing Genomic Medicine in the Clinic: The Future is here." *Genetics in Medicine* (Jan. 10, 2013): 1-10.

Ormond, Kelly E., Matthew T. Wheeler, Louanne Hudgins, Teri E. Klein, Atul J. Butte, Russ B. Altman, Evan A. Ashley, and Henry T. Greely. "Challenges in the Clinical Application of Whole-Genome Sequencing." *Lancet* 375, (May 15, 2010): 1749-1751.

Baker, Stephen. "Genomic Medicine has Failed the Poor." *Nature* 478, (Oct. 20, 2011): 287.

Kahn, Jonathan. "Race in a Bottle." *Scientific Amercian* 297, no. 2 (August, 2007): 40-45.

Couse Schedule**Week 13****4/1/13, Discussion/Workshop B (Neuroscience) and C (Genomics)**

- Gold Pod: Workshops in LSC
- Maroon Pod: Discussion in LSE

4/3/13, LSE, Bioenergy Panel**Guests**

- Netra Chhetri, Assistant Professor, School of Geographical Sciences and Urban Planning and Consortium for Science Policy and Outcomes
- Gary Dirks, Director, Global Institute of Sustainability and LightWorks
- Devens Gust, Regents' Professor, Chemistry and Biochemistry
- Willem Vermaas, Professor, SOLS

Readings

Lines, Sydney. "ASU Researchers Showcase Energy Technologies at Innovation Summit." *Asu News [Science & Tech]*, Mar. 7, 2013.

Green, Jenny. "Regents' Professor Inspires Generations of Women Chemists." ASU News [Now]. (March 2, 2011) https://asunews.asu.edu/20110216_Regents_AnaMoore

Carlson, Robert H. "Toward Building Biofuels" in *Biology is Technology: the Promise, Peril and New Business of Engineering Life*, 158-170. Cambridge, MA: Harvard University Press, 2010.

Buyx, Alena and Joyce Tait. "Ethical Framework for Biofuels." *Science* 332 (Apr. 29, 1211): 540-541.

Schenkel, Roland. "The Challenge of Feeding Scientific Advice into Policy Making." *Science* 330 (Dec. 24, 2010): 1749-1751.

Ellison, Karin D. and Karen Wellner. "Social Responsibilities in Science, Social Science, and Engineering." In *Biomedical Responsible Conduct of Research, Basic Course*, CITI Collaborative Institutional Training Initiative. Accessed on March 15, 2013.

<https://www.citiprogram.org/members/learnersII/moduletext.asp?strKeyID=4BC205E2-324B-45E5-8FE0-D27165E31A3B-14879123&module=15198>.

Week 14

4/8/13, Discussion/ Workshop D (Bioenergy) and E (Biodiversity, Conservation and Sustainability)

- Gold Pod: Discussion in LSE
- Maroon Pod: Workshops in LSC

4/10/13, LSE, Biodiversity and Conservation Panel

Guests

- Ben Minter, Associate Professor, SOLS
- Andrew Smith, President's Professor and Parent's Association Professor, SOLS
- Stuart Wells, Director of Conservation and Science, Phoenix Zoo

Readings

Marton-Lefevre, Julia. "Biodiversity Is Our Life." *Science* 327 (Mar. 5, 2010): 1179.

Stokstad, Erik. "Despite Progress Biodiversity Declines." *Science* 329 (Sept. 10, 2010): 1272-3.

Rands, Michael R. W. et al. "Biodiversity Conservation: Challenges Beyond 2010." *Science* 329 (2010): 1298-1303.

Coulombe, Peggy. "Is Climate Change Forcing a 'Move It or Lose It' Approach to conservation?" *ASU News [Science & Tech]*. (Oct. 4, 2010)

https://asunews.asu.edu/20101001_speciesmove

Conde, D. A. et al. "An Emerging Role of Zoos to Conserve Biodiversity." *Science* 331 (Mar. 18, 2011): 1390-1.

Lacey, Marc. "Lions, Check. Giraffes, Check. Squirrels, Check. Squirrels?" *New York Times*. (July 26, 2011). <http://www.nytimes.com/2011/07/27/us/27squirrels.html>

Vince, Gaia. "Embracing Invasives." *Science* 331 (March 18, 2011): 1383-4.

Week 15

4/15/13, Discussion/ Workshop D (Bioenergy) and E (Biodiversity, Conservation and Sustainability)

- Gold Pod: Workshops in LSC
- Maroon Pod: Discussion in LSE

4/17/13, LSE, Sustainability Panel

Guests

- Jim Elser, Regents' Professor and Parent's Association Professor, SOLS

Couse Schedule

- Tom Seager, Associate Professor, School of Sustainable Engineering & the Built Environment
- Arnim Wiek, Assistant Professor, School of Sustainability
- Abby York, Assistant Professor, School of Human Evolution and Social Change

Readings

Elser, James J. "Phosphorus: A Limiting Nutrient for Humanity?" *Current Opinion in Biotechnology* 23, no. 6 (2012): 833.

James Elser and Elena Bennett. "A Broken Biogeochemical Cycle." *Nature* 478, no. 7367 (2011): 29.

Crow, Michael M. "The Moral Basis of Sustainability Science." In *Third International Conference on Sustainability Science: Sustainability Science in Action*, edited by Arnim Wiek, John Harlow, Rob Melnick and Sander van der Leeuw, 9-11. Tempe, AZ: Global Institute of Sustainability, Arizona State University, 2012.

Wiek, Arnim. "Living Sustainability." In *Defining Sustainability*, edited by H. S. Lineberry, 18-27. Tempe, AZ: Arizona State University Art Museum, 2010.

Raven, P. H. "Presidential Address. Science, Sustainability, and the Human Prospect." *Science* 297, no. 5583 (Aug. 9, 2002): 954-958.

McMichael, A. J., C. D. Butler, and Carl Folke. "New Visions for Addressing Sustainability." *Science* 302, (Dec. 12, 2003): 1919-1920.

Rowe, Debra. "Education for a Sustainable Future." *Science* 317, (July 20, 2007): 323-324.

Liu, Jianguo. "China's Road to Sustainability." *Science* 328, (April 2, 2010): 50.

Smith, M. R. "Technology, Industrialization, and the Idea of Progress in America." In *Responsible Science*, edited by K. Byrne, 1-30, 1986.

Farrell, Alex. "Sustainability and the Design of Knowledge Tools." *IEEE Technology & Society Magazine* (1996/1997): 11-15.

Week 16**4/22/13, Discussion (Funding Science)**

- Gold Pod: Discussion in LSE
- Maroon Pod: Discussion in LSC

Couse Schedule**4/24/13, LSE, Funding Science Panel****Guests**

- Ira Bennett, Assistant Research Professor, Consortium for Science Policy and Outcomes
- Elisa Graffy, Professor of Practice, CSPO and Lightworks
- Nancy Grimm, Professor, SOLS
- Marjorie Townsend, Research Advancement Manager, SOLS

Readings

Hourihan, Matt. "Federal R&D in the FY 2013 Budget: An Introduction."

Mervis, Jeffrey. "White House Panel Urges Agencies to Take More Risks." *Science* 338, (Dec. 7, 2012): 1274.

Bronk, Detlev W. "The National Science Foundation: Origins, Hopes, and Aspirations." *Science* 188 (1975): 409-14.

Week 17**4/29/13, LSE, Review Session**

BIO 416/HPS 410: Professional Values in Science
Writing a case and analyzing it
Spring 2013

The case

Your case should be a short *account* (1 pg or less) of an ethical issue or dilemma involving a researcher (the protagonist). (Note: Dilemmas have a special definition in applied ethics. Ethical dilemmas exist when rights or responsibilities conflict. The conflict can pertain to the rights and responsibilities of a single person in the case or the conflict can be between two or more characters.) The literary form of the account is flexible—cases can be narratives, dialog, diary entries, a letter, or email from the protagonist, etc. The case should end by taking the basic *question*, “what should the protagonist do?” and making it specific to the particular case.

Your case will be based on research on your topic beyond readings assigned in class. You should find 4-5 news items or scholarly articles on your topic to inform your case. If you want to write a historical case, find several descriptions of something that happened in recent science and write a short synthesis focusing on one ethical dilemma as your case. If you want to write a hypothetical case, you can synthesis aspects of several actual cases or you can use discussion of ethical issues in your are to inspire a novel case. The bibliography of your resources will come at the end of your case. In addition, print or copy the first page of each article and submit them with your final case.

Karin Ellison 2/1/14 11:33 PM

Comment [1]: C-2

Example

Account: A postdoctoral fellow, CW, is tempted to finish a grant proposal quickly by adapting part of the background section from a grant he previously reviewed as his background.

This is a really compressed account. I'd recommend that you set yours up so that you have more information to work with. For example, you could take this basic idea and expand it out to a story that is several paragraphs long. In fact, this account is a compressed version of a case I often use in another course. The original version is “the Charlie West Case” from *Moral Reasoning in Scientific Research: Cases for Teaching and Assessment*. The original is a little over a page single-spaced and includes a lot of context for why Charlie needs to finish the proposal quickly. The full case is normally posted at <http://poynter.indiana.edu/tre/resources.shtml> but the link is currently broken.

Question: Should CM use the previous proposal in this fashion?

Good Research Resources

- *Science, Nature, JAMA, Chemical and Engineering News*, and other leading science journals
- *The Scientist, Technology Review*, and other science news periodicals

- *Science and Engineering Ethics, Accountability in Research, IRB: Ethics and Human Research*, and other scholarly research or science and engineering ethics publications
- *New York Times, The Wall Street Journal*, and other major newspapers
- *US News and World Report, The New Yorker*, and other serious magazines
- The Office of Research Integrity, the unit in the Department of Health and Human Services that investigates misconduct in science, posts summaries of its investigations at: <http://ori.hhs.gov/misconduct/cases/>

Analysis

I've suggested you use Elizabeth Heitman's "Using Cases in the Study of Ethics" (In *The Ethical Dimensions of the Biological Sciences*, edited by Ruth Ellen Bulger, Elizabeth Heitman and Stanley Joel Reiser. Second ed., 349-352. Cambridge; New York: Cambridge University Press, 2002.) as a framework for your analysis. The overall goal of the analysis is to explore the ethical dimensions of the situation and propose a course of action for the protagonist. The analysis can be a traditional narrative or more in the style of a detailed outline with section headers and lots of lists. Here are some comments on the sections of the analysis:

Part 1: State the ethical questions.

In this section, you're seeking to complete the thought, 'This case is about...'. This section can be as simple as a list of ethical issues or dilemmas presented by the case. You can also comment on the issues in 2-3 sentences each, if you wish. If you chose to comment, the result will be an annotated list. You use the annotation to flesh out the particular aspects of the ethical issue presented in the case. Your list should capture all the major ethical concerns present in the situation; often cases have more than one issue.

Example, cont.

Two possible ethical questions:

- Does CW's interest in completing the grant proposal quickly outweigh his obligation as a peer reviewer to hold reviewed materials confidential?
- Is this use of the proposal plagiarism?

Part 2: Identify the affected parties, their rights and reasonable expectations; missing information.

This section differs significantly from the discussion described in Heitman's essay. From her description of a good discussion, omit all restatement of information. You should have already set out the facts of the case in your case account.

In this section, the goal is to think broadly about the individuals, groups, and institutions that might have a stake in the actions taken by the protagonist and to

identify their rights in the situation. Again, I'd start with a list of the parties and annotate it.

Example, cont.

Two possible parties, rights & expectations:

- The author of the original grant proposal. This researcher has the right to have his/her intellectual contribution recognized appropriately if others draw on his/her work. He/she also should be able to expect that reviewers hold grant proposals confidential.
- The grant agency. The agency should be able to expect that researcher's proposals represent original work.

You can also discuss missing information, if having information not outlined in the case might substantially change the protagonist's course of action.

Example, cont.

Missing information:

- Nature of the grant deadline. (E.g. Is CW responding to a regular call for proposals? If so, when is the next time CW could submit the proposal?) Explain how this information might be important.

Part 3: Describe relevant ethical principles, professional standards, and laws.

The goal in this section is to briefly lay out the major ethical principles, professional standards, and/or laws that the protagonist must consider to formulate a compelling response to the issue. For this section, you should begin with the readings assigned for class. Which readings you draw on for ethical principles will depend on your case. For relevant standards and laws, Steneck's *ORI Introduction to the Responsible Conduct of Research* provides a brief overview of major professional standards and laws. You will also determine which professional society the protagonist would likely belong to, find the society's code of ethics, and discuss how one or more specific elements of the code apply to your case. Print the code of ethics and submit it with your final case. For codes of ethics look at the societies' web sites or the IIT ethics library:

<http://ethics.iit.edu/research/codes-ethics-collection>

Be sure to cite your sources in this section of the analysis.

Example, cont.

An ethical principle, professional standard, or law:

- Federal definition of plagiarism. Summarize it briefly.

Karin Ellison 2/1/14 11:40 PM
Comment [2]: C2

Part 4: Propose one or more possible courses of action for the protagonist, outline ethical arguments for and against each possibility, and describe the likely consequences of the actions

Creativity counts! The idea here is to come up with the best option available to the researcher in a sticky situation. There may be a couple of obvious options. If so, state two or three and analyze each of them. If there is a really bad option, you may want to state it and explain its shortcomings. You don't need to write about lots of options. Pick two or three of the most interesting options, such as something researchers might likely do, a particularly good solution, or a plausible compromise in the face of no good solution, and focus on those.

Example, cont.

Two possible courses of action:

- CW delays submission of the grant proposal.
- CW doesn't copy the previous material exactly; he paraphrases it.

Part 5: Pick a course of action.

Briefly state which of the options outline in Part 4 you would pursue if you were the researcher and what considerations were most important for informing your choice.

Bio 416/HPS 410 Professional Values in Science
Course Catalog Description
Spring 2014

Considers issues related to values in science such as collaboration, finances, legal issues, media, mentoring, ownership of ideas, scientific integrity.